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The Clinical Laboratory and the Practitioner *

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When your Secretary asked me to prepare a paper to present your Division he left the subject to my own choice. On king it over it seemed to me that it might prove useful to uss with you the place the clinical laboratory can, and should, in veterinary diagnosis. This decision is partly based on erience gained in using and teaching the various methods ployed in the clinical laboratory, and partly on the experience has acquired through dealing with a not inconsiderable nber of samples sent in by veterinary practitioners.

First of all, I would like to emphasise a point I have on more n one occasion made in public. The clinical laboratory does provide a short cut to diagnosis. So if the clinical laboratory o provide the assistance that it can in diagnosis, its aid should be sought after a full clinical examination of the patient been made. Without the background of this clinical examina- it is ludicrous to attempt to interpret some clinical laboratory lings, and, if such an attempt were persisted in, a gross error diagnosis might result. And yet, if interpreted in the light of clinical findings, many quite simple laboratory procedures can of the utmost value in diagnosis.

Now a not unimportant point is that a suitable and representa- specimen be obtained, and this must reach the laboratory in tate fit for examination.

Having stated these, what I might call fundamental, truths, I e it will be possible for me to convince you that they are stantially founded on fact. To do so I propose to run over e of the conclusions one has formed as a result of experience the laboratory examination of urine, faeces, blood samples, milk skin scrapings; I am taking the liberty of including in the ical laboratory an X-ray set and a *post-mortem* room. I do propose to discuss the technique of the laboratory methods you to-day, except in so far as I have some pet method seems to me to have merits over others.

NE:

is possible to carry out all the tests usually applied to a imen of urine if two fluid ounces are available. This specimen be from urine passed at one time. or it may be made up of mixture of the urine passed on several successive occasions, raction of the whole being used for analysis. The specimen urine must be transferred in a *clean bottle*; most confusing unintelligible results can be got from the examination of a ple of urine adulterated with some cosmetic preparation, so very often smell the sample of urine for traces of scent, etc. t is intended to examine the deposits in urine, the sample t be collected in such a way that it is free from gross con- ination with insoluble matter.

usually examine a specimen of urine as follows: Specific vity, Reaction, Albumin, Bile Pigment, Bile Salts, Sugar, Blood ment, Blood, Ketone Bodies (in the dog Indican), and if other ings indicate the necessity, a microscopic examination of the osits is made. I consider the results of this examination under two main headings, (1) pre-renal, and (2) renal and post-renal, ring in mind that both the specific gravity and reaction may affected by either pre-renal or renal and post-renal disease. substances which may be present as a result of a pre-renal dition are bile pigment, bile salts, sugar, blood pigment, ketone ies and indican. None of these, except blood pigment, can r in the urine as a result of disease of the urinary system. he presence of these abnormalities indicates a disturbance of normal processes of the body. Some indicate a particular type disease process and their presence interpreted in the light of clinical findings often materially assists diagnosis.

is vital to distinguish between haemoglobinuria and haema- and this is most satisfactorily done by a consideration of deposits.

dican is always present in large quantities in the urine of the herbivora. In the normal dog's urine it is absent; appreciable quantities seem to indicate increased intestinal putrefaction.

The abnormalities found as a result of a renal or post-renal condition are quite simple, being albumin, blood and deposits.

While the presence of albumin is readily recognizable evidence of renal disease, it must be realized that albumin may be present in the urine in substantial amounts without any disease of the kidney, *e.g.*, acute cystitis. So we must interpret the presence of albumin in the light of the history and clinical signs of the case, and the other findings in the urine, namely specific gravity and deposits. In chronic interstitial nephritis in the dog the amount of albumin is usually small and gets less as the disease progresses.

The presence of blood in urine indicates some damage to kidney or urinary passages; the clinician may be able to indicate the site when the laboratory worker cannot.

The deposits in urine provide much useful information. We distinguish between haemoglobinuria and haematuria by recognizing the deposit in the latter.

The identification of epithelial cells may enable one to localize the site of an inflammatory process in the urinary system. Certain causal organisms can be identified in stained smears of urinary deposits.

Quantitative tests on a single sample of urine are of very little real value. If they are desired an aliquot part of a 24-hour sample should be used and it is often desirable to do a quantitative test for the same substance in the blood. Such tests are chiefly of use in estimating the functional activity of the kidneys, and are, therefore, mostly used in canine practice.

FAECES:

I think it is desirable to point out to you that worm egg counts are only of relative and are not of absolute significance. Except in cases where the count is extremely high, the egg count cannot be interpreted except in relation to the clinical signs. It is well to remember that a massive invasion of larvae may cause clinical signs of acute helminthiasis before the egg count has reached significant figures. It is in such cases—especially in sheep—that a *post-mortem* examination provides a valuable check-up in the diagnosis of disease affecting the flock or herd.

We now use the Gordon-Whitlock as the routine method of counting strongyle and ascarid eggs. While we express the results of this method in terms of eggs per gramme, the figure given should be regarded rather as an index than as a figure of absolute precision. I find, however, that it is not widely realized that this method does not bring up fluke eggs; these are best demonstrated by a sedimentation method. For some months we have made a practice of examining all samples of ruminant faeces by the Gordon-Whitlock method for strongyle eggs and also examining the deposit obtained by sedimentation for fluke eggs, and then a preparation is made and stained for Johne's bacillus. I have found this triple examination has often proved of value in clearing up a diagnosis.

BLOOD:

The largest number of samples of blood are sent in for agglutination tests. If these are delayed in transit in warm weather they are apt to be badly haemolyzed on arrival at the laboratory. A method we have used to overcome this difficulty is to draw a larger sample of blood than is customary, allow this to clot, and then aspirate the serum with a syringe and needle, discharging the serum thus obtained into the receptable for despatch to the laboratory. In carryinrg out this method the bottles, syringe and needles must be surgically clean.

Samples of blood intended to be unclotted sometimes arrive at the laboratory in a partially clotted state. This is usually due to the anticoagulant not being dissolved and distributed throughout the blood immediately after its withdrawal. The bottle containing the blood and anticoagulant should be repeatedly but gently inverted.

We often get a bottle of clotted blood with a request that it be examined for protozoa. Such material is not very satisfactory. I find the best material is a blood smear made on a clean glass slide and fixed by drying in air. Several such smears should be made, and the blood should, if possible, be taken at the height of the illness.

* Presented to the North of Scotland Division, N.V.M.A., at rdeen, December 8th, 1945, and to the West of Scotland sion, N.V.M.A., at Glasgow, March 6th, 1946

MILK SAMPLES:

I believe that if it is worth while taking a milk sample for laboratory examination, it is worth while doing it properly. The chief points are that the container should be clean and sterile, and that risk of contamination of the sample during its obtainal should be reduced to a minimum. This really means a clean udder, clean teats, clean hands and a clean receptacle. A wide-mouthed, glass-stoppered bottle is best. I have had some difficulty with samples coming from a long distance in hot weather, these arriving so curdled that they are useless. A few drops of formalin will prevent souring and will not interfere with the microscopic examination of smears from such milk, but it will interfere with cultural or biological examination of the sample, but neither cultural nor biological examination of a stinking curdled sample of milk is very satisfactory. I am indebted to Mr. Hardwick, S.I. in Aberdeen, who drew my attention to the method of using one part of a 5 per cent. solution of boric acid in ten of milk; this does not apparently interfere with biological or cultural examination.

I would like to see more people making their own incubated milk smears. The sample of milk is kept at moderate room temperature for 24 hours and a smear is then made from the milk thus incubated, and is stained appropriately. Newmann's stain is probably the best. The method has been found of value in the differentiation of the various forms of mastitis.

SKIN SCRAPINGS:

The only satisfactory material for the demonstration of the mites of sarcoptic mange is a scraping carried sufficiently deep to cause oozing of blood. A clipping of hair containing some epithelial debris is not good material; by luck an odd parasite may be found, but the absence of parasites in such material is not even good presumptive evidence that the case is not one of mange.

The scraping may be prepared by emulsifying some of it on a slide with liquor potassae. I find it more satisfactory to digest the scraping in liquor potassae and examine microscopically the deposit obtained by centrifugalization. I do not like digestion by boiling in a test tube over a bunsen; too often some of the material is lost by spurting and unnecessary disintegration of the parasites is caused by vigorous boiling. Digestion by placing the test tube containing the scraping and liquor potassae in a water bath is slower, but in my experience far the most satisfactory method. If time is no object the scraping may be macerated in cold liquor potassae.

In examining scrapings for mange mites it is wise not to be deterred in the search by finding lice; it is quite common to find a few lice in material from cases of mange, especially in cattle.

It is often necessary to examine a number of scrapings before the mites are found; this is especially apt to occur in an animal that has been treated with an oily dressing.

CHEMICAL EXAMINATION:

I would like to make the point that we should ask ourselves two questions—Will the poisonous substance still be present in the tissues? Are samples of food and water still likely to be contaminated?

X-RAY EXAMINATION:

I want to make only a few remarks regarding X-ray examinations. In its proper place an X-ray examination can be of great help in elucidating a problem of diagnosis in a small animal. But it is well to remember that there are distinct limitations on what can be done by X-rays. It is surprising how often, if a careful and thorough clinical examination is made, one finds it unnecessary to submit an animal to an X-ray examination which has been requested. I suggest that this simple question should be answered before an X-ray examination is sought: "Is there a likelihood in this case of there being a lesion of such a character that it will be revealed by X-rays when contrasted with the surrounding tissues?" The average member of the general public has an almost pathetic faith in the diagnostic properties of X-rays. We must be on our guard against the indiscriminate use of X-rays which might well bring a useful diagnostic procedure into disrepute.

Post-mortem EXAMINATION:

I suppose we are justified in regarding a *post-mortem* examination as part of the ancillary service the pathologist can and should give to clinical science, but the clinician must play his fair share in this investigation. I regard it as of extreme importance that the clinician should supply the pathologist with an accurate and concise history of the case. This is not only invaluable in the accurate analysis of the *post-mortem* findings, but is of inestimable value to both the clinician and the pathologist in building up our knowledge of the correlation between signs and lesions. It is w to remember that there are some diseases in which a *post-mor* examination will fail to reveal any definite lesion.

Usually we prefer to approach our problems through the liv animal, but there are outbreaks of disease in which the effective approach is through a *post-mortem*; in these cases *post-mortem* examination must be made with meticulous c The type of *post-mortem* work possible in a knackery is usually sufficiently accurate to enable one to build up a work hypothesis for the investigation of an obscure problem. Recen I have experienced two instances in which an apparently insol problem became relatively straightforward when the results o detailed *post-mortem* examination were studied in relation to clinical signs and the attendant circumstances.

May I enter a plea for the proper labelling and wrapping specimens sent into the laboratory? It is surprising the nu of specimens that arrive unlabelled and with no indication their origin or what examination is desired.

I have not dealt with clinical haematology for several rea not the least of these being that until we build up a gre amount of fundamental knowledge of the interpretation of de tions from the normal, the help to be obtained in diagnosi not as great as one would like.

Finally, I would like to point out to you that most of procedures I have mentioned do not require expensive or elab equipment and can be done by the clinician himself.

A Note on the Toxicity of Phenanthridinium for Cattle

by

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The phenanthridinium compound 1553 [described by Walls, (1945.) *J. Chem. Soc.* pp. 294-300.], of which the high trypano activity against *T. congolense* infection in bovines was firs corded by Carmichael and Bell (1944), has proved consider more toxic and irritant than was indicated. Bell (1945) gav account of the toxic effects produced when large doses were ad istered to cattle intravenously, and noted that relatively l doses of the drug induced photosensitization six weeks after ad istration. He estimated the therapeutic index to be 6·25, the minimum curative dose as 0·8 mg./kilo and the maxi tolerated dose as 5 mg./kilo.

In field trials carried out by Cronly, in Uganda, during latter part of 1945, the drug was used in 2 per cent. solution a standard dose of 2 mgm./kilo was administered subcutane This dose, judging by the experiments of Carmichael and (*loc. cit.*) was considered both safe and sufficiently potent to a high percentage of *T. congolense* infections in both acute chronic phases of the disease. Out of 187 cattle treated with dose, nearly all developed symptoms of photosensitization six weeks after administration of the drug, and 41 subseq died. In addition, severe local reactions at the site of inj were of frequent occurrence, resulting in sloughing of are skin up to 12 in. or more in diameter.

Further laboratory trials confirmed that a dose of 2 mgm. is unsafe for general use under conditions obtaining in U and indicated that the toxic level of dose lies between 2 mgm./kilo.

On subcutaneous injection of phenanthridinium 1553, lesions of the severe type, followed by sloughing, develop stantly and appear to bear no relation to the level of dose. a dose of 1 mgm./kilo subcutaneously, using 1 per cent. so under laboratory conditions, the severe type of local lesio veloped in 8 per cent. of the treated cattle. Of four animals received the drug subcutaneously at doses of 2, 3, 4 and 5 mgm respectively, those receiving 2 and 5 mgm./kilo develoed lesions at the inoculation site followed by extensive sloughing the other hand, intramuscular injection into the muscles thigh is invariably followed by induration, the degree of appears to be directly influenced by the level of dose. W dose of 1 mgm./kilo of phenanthridinium 1553 in 1 per solution intramuscularly, induration and laming are slight appears to be the route of choice for work in the field, wh are dealing with cattle in thousands, and the intravenous is impracticable

In cattle which were infected with *T. congolense* and with phenanthridinium 1553 at doses ranging from 2 to 5 kilo, a temporary gain in weight, lasting for periods up to weeks, resulted. This was followed by rapid loss of weigh progressive emaciation for the ensuing three weeks or

neralized photosensitization appeared during the sixth to eighth
ks in all the treated animals. Symptoms included photophobia,
rymation, swelling of the eyelids, conjunctivitis, glaucoma, and
al discharge; the skin on various parts of the body became
ensively affected in the majority of animals with erythema,
s of hair, cracking of skin and exudation of plasma; in some
es small ulcers developed, which became necrotic, fusing with
acent ulcers and involving large areas of skin. Emaciation at
s point was extreme, and death occurred in the majority of
ted animals, including one of the two animals which received
enanthridinium 1553 at 2 mgm./kilo. Recovery in surviving
mals was slow. Of three healthy cattle which were given doses
3, 4 and 5 mgm./kilo, all showed considerable loss of weight
d emaciation. The animal which received the drug at
mgm./kilo showed classical symptoms of photosensitization six
ks later, recovering slowly afterwards. The other two animals
d 46 and 38 days after administration of the drug.

Constant *post-mortem* findings were anaemia and severe emacia-
n, an enlarged and highly friable condition of the liver with
y changes involving the entire substance of the organ, a tendency
biliary stasis and fatty degeneration of cardiac muscle and
neys. Whilst oedemas, haemorrhages of various types and
ndice were found in most organs, their incidence was irregular
d could not be correlated with dosage.

In extensive field trials phenanthridinium 1553 has been admin-
red at a standard dose of 1 mgm./kilo intramuscularly and no
ic effects have been observed. At this level of dose it is
ubtful whether the relapse rate in *T. congolense* infections ex-
ds 5 per cent. Recently, under laboratory conditions, the drug
been given at a dose of 0·8 mgm./kilo repeated after 14 days;
toxic symptoms have resulted, and in the relatively small number
cases treated, no relapses have occurred.

Acknowledgments are due to the Director of Veterinary Services,
anda, for permission to publish this paper.

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Wound Treatment in Small-Animal Practice *

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y the far the most common type of wound encountered in small-
mal practice is the lacerated, grossly contaminated injury result-
from street accidents. This is closely followed in country
ctice by wounds caused by gunshot, by fighting and, more
ely, by wire.

he technique of treatment of such injuries has made notable
ances during the war years and if one could express the
nce of these changes, they might be said to exemplify the
st stage in the evolution of surgical thought from antisepsis
asepsis; from empirical muddling in the healing and recupera-
power of the tissues to an intelligent exploitation of these
ural functions. They consist primarily of the removal of all
tors inimical to healing and of the encouragement of those
tors which promote it.

o illustrate these cardinal points, consider for a moment the
acteristics of a typical street accident wound. This is irregular
outline, grossly contaminated by hair, grit and by all that
s by the name of dirt. There is bruising of the subcutaneous
ues and muscles. Probably some time has elapsed since the
iction of the injury. There may have been considerable
morrhage and a greater or lesser degree of shock may be
ent. The first stage in the treatment of such a case is that
controlling haemorrhage and shock, the bearing of the latter
the nutrition of the damaged area being considerable. Warmth
the body generally and the intravenous administration of normal
ine are the best means at our disposal to combat shock.

The atmospheric temperature of the surgery is a point upon
ich I should like to touch here. Temperatures approximating
body temperature, together with a high relative humidity,
ear to me to have a direct bearing upon the healing and
ess rate you hope to obtain. Cold and dryness together reduce
vitality of exposed tissue by slowing down local metabolic
cesses and by dessication predispose to shock. I prefer to
rate in a room temperature consistent with comfort, stripped
the waist beneath a gown.

We now come to the treatment of the injury itself. The wound
ext thoroughly washed by flushing with normal saline solution
at or slightly above body temperature. This flushing should be copious as it not only cleanses but revitalizes to a degree. The use of swabs at this stage should be minimized as their rough or careless use serves only to force infection and debris still further into the tissues.

The next stage is that of débridement or the surgical removal of all damaged skin and tissue. The importance of this stage cannot be over-emphasized and it calls for a care and delicacy of manipulation that few of us have the time or inclination to devote to it. At this stage every accessible portion of damaged skin, subcutaneous tissue and muscle must be completely removed, converting the wound as far as possible into a sterile surgical cavity. This is easy to say but difficult to achieve and gross accidental trauma must not be replaced by surgical trauma, nor must prolonged exposure be allowed to prejudice the vitality of newly exposed tissue. Great delicacy of instrumentation and frequent or continuous warm saline irrigation must be relied upon here. Results are directly proportional to the thoroughness with which this débridement is performed.

The next problem is that of closure where possible or of another procedure where this may be necessary. Discussion of the relative merits of suture and sature material is out of place here but nylon would be the material of my choice where closure is feasible. Where closure is not practicable the wound may be coated with such preparations as propamidine jelly or cream before applying dressings or a closed plaster cast. Whatever method is used it should be borne in mind that the processes of healing should require no further direct assistance. The temptation to peer under dressings or cast should be resisted. If it is feared that suppurative processes are at work sulpha medication by mouth or the use of a penicillin preparation hypodermically should be adopted as combative measures. The first removal of sutures, dressings or casts is a matter for individual judgment and no rule of thumb can be given to apply to such a variety of cases.

You will notice that I have omitted—and it is a purposeful omission—to deal in this short paper with the question of anaesthesia. Each case must be dealt with on its merits from this angle, bearing in mind the questions of shock and toxicity of the various anaesthetic agents.

Finally, if I may recapitulate, the salient points of modern wound treatment are the maintenance and restoration of tissue vitality by the surgical removal of all damaged tissue plus frequent or continuous saline irrigation during operation and allowing resolution to proceed unhampered by repeated applications of antiseptics and dressings.

* Communicated to the Eastern Counties Division, N.V.M.A., at
tford, November 13th, 1945.

F.A.O. VETERINARY CONFERENCE IN LONDON

At the request of the Food and Agriculture Organization a meeting was held in London in mid-August to investigate a problem of great importance to the food supplies of the world.

The widespread ravages of animal plagues in many parts of the world and their effects on food supplies are not generally known to the public in the United Kingdom, where the livestock have for many decades been maintained in comparative freedom from disease. Not only do these pestilences cause enormous loss of livestock products for human consumption, but the casualties in working oxen, buffaloes, horses and so on, impede the cultivation of large areas of the most productive agricultural land in many countries. For instance, diseases among buffaloes have led to serious reduction in the rice crop, for mechanical traction cannot be used in the paddy fields. Throughout the world the collection of information on animal epidemics and the co-ordination of methods of controlling them has for some years past been the concern of the International Office of Epizootics in Paris.

International conferences have been held from time to time in various parts of the world to deal with regional problems, and measures for the control of rinderpest have been advanced by the work of American and Canadian research workers during the war.

The purpose of the meeting was to carry matters a stage further by considering in what way the activities of veterinary organizations all over the world could be properly co-ordinated under the F.A.O. umbrella. Eminent veterinary scientists from America, Australia, France, India, Iran, New Zealand, South Africa and the United Kingdom attended. U.N.R.R.A. and international and imperial veterinary organizations were also represented.

The report of the meeting, which will be submitted to the F.A.O. Conference now in session at Copenhagen, recommends that as a further step F.A.O. should set up a Standing Veterinary Committee to advise the Organization, and to co-operate with the International Office in Paris. It is intended that the Standing Committee should have as wide a scope as possible and F.A.O. are to be asked to consider the possibility of correlating the existing veterinary bodies under central international machinery in Paris.

CLINICAL COMMUNICATION

Flock Idiosyncrasy to Carbon Tetrachloride

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Soon after the introduction of carbon tetrachloride as a treatment for liver fluke disease it was realized that animals are sometimes intolerant to the drug. The early experiences in cattle indicate the position quite well, for while Norris (1926) found that young bovines weighing 450 lb. would tolerate 60 c.c., given over a period of four days, Wilson & Blakemore (1930) recorded fatal cases of poisoning in cattle weighing 900 lb. after dosing with 5 c.c. Intolerance of sheep to doses as low as 1 to 2 c.c. has also been reported by Montgomerie (1927) and Clough (1928, 1936), but evidently sheep do not show idiosyncrasy as often as cattle, and in view of the absence of reports relating to poisoning during recent years it would seem that the therapeutic dose of 1 c.c. is usually administered without accident. It must not be assumed, however, that the precaution of ascertaining flock tolerance before adopting mass treatment can be dispensed with, since serious losses were recently experienced following dosing with 1 c.c.

OBSERVATIONS

The flock concerned consisted of 220 Suffolk ewes which were folded at night on a rye grass ley, and kept on permanent pasture during the day. They were also given mangolds in the fold and a small allowance (less than 54 lb.) of oats per day. This method of management has been adopted for three weeks prior to dosing. Lambing started in March and was completed by the end of April. Each ewe was given a 1 c.c. capsule of carbon tetrachloride on the afternoon of May 1st because the flock had been unthrifty for some time and liver fluke disease was suspected. They were not fasted prior to treatment. The following morning 19 ewes were found dead and a further seven died during the day; the remainder were ill but no more deaths occurred and they gradually recovered. The sheep in the best condition were the most severely affected.

The symptoms described by the owner were depression, inability to stand, with coma before death. *Post-mortem* examinations revealed fatty degeneration and necrosis of the liver, together with congestion of the abomasum. There were no other gross lesions and no evidence of distomatosis. The general unthriftiness of the flock could be attributed to parasitic gastro-enteritis. A filtrate of the intestinal contents of one of the ewes was tested for bacterial toxin by intravenous inoculation into mice, and the results were negative. An histological examination was made of the liver, kidneys and heart muscle of two of the subjects, the specimens being obtained immediately after death. Extensive necrosis of the liver was found in both cases, but there were no significant lesions in the heart or kidneys. Blood samples were obtained from the same two sheep just before death, and the serum calcium levels were found to be within the normal range, being 9·6 and 10·7 mg. per cent.

Minot & Cutler (1929) found that there was an increase in the guanidine-like substances of the blood in carbon tetrachloride poisoning, and they attributed some pathological significance to this alteration. In the two dying sheep the values for guanidine-like substances, as determined by their method, were 2·6 and 1·9 mg. per cent. respectively, being much higher than the values of 0·4 and 0·3 mg. per cent. for two normal control sheep.

Discussion

The evidence upon which poisoning of sheep has been attributed to carbon tetrachloride has been mainly circumstantial. Some of the cases which might have been attributed to intolerance were due to inhalation pneumonia following rupture of the capsules (Clough, 1936) and it is possible that others may have arisen from enterotoxaemia precipitated by the irritant action of the drug on the intestine. In the case investigated these possibilities were excluded, and the finding of liver necrosis together with an increase of guanidine-like substances in the blood indicates that the losses were due to carbon tetrachloride poisoning and that the sheep exhibited a marked idiosyncrasy to the drug.

The circumstances under which the outbreak occurred are not without interest. The sheep were not receiving a concentrated diet nor were they in good condition, although the best ewes were most severely affected. They were, however, lactating and in cows there would appear to be some association between lactation and idiosyncrasy to carbon tetrachloride.

Minot & Cutler (1929) found that dogs on a meat diet low in Ca were more susceptible to carbon tetrachloride. There was no evidence of hypocalcaemia in the two dying ewes, and the diet was not low in calcium, although it is possible that lactation may have had some effect on the metabolism of this element. Minot & Cutler attributed some significance to the high guanidine content in blood, and our findings are in agreement.

It would appear to be important to ascertain the tolerance of f to carbon tetrachloride before adopting mass treatment even doses as low as 1 c.c.

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ABSTRACT

[Vitamins in Animal Health. Part II.—Water-soluble Vita
ALLCROFT, RUTH. (1945.) *Vet. J.* **101**. 263-279.]

The B group of vitamins can be divided into (*a*) thiamine, flavin and nicotinic acid, which are associated with defic diseases; (*b*) pyridoxine, pantothenic acid, biotin, *p*-aminobe acid and folic acid, shown to be essential dietary factors for animals, and (*c*) inositol, choline and methionine which co fat deposition in certain organs. They are all universally d buted in living matter, and are generally associated, so th source rich in one is also likely to be rich in the rest. Rumi are independent of the B group due to synthesis by the m flora of the rumen, but any vitamins formed by bacterial syn in the alimentary canal of animals with simple stomachs te be evacuated in the faeces.

B_1, Thiamine or Aneurin.—The richest natural sources are v and the pericarpal layers and embryo of cereal grains and leg It is not stored to any significant extent in the animal body is concerned with intermediary carbohydrate metabolism, where large amounts of fat are fed the animal's requirements lower. In man "beriberi," either the "dry type," with mus wasting, dysaesthesia of the skin and paralysis of the legs, o "wet type" with oedema involving the limbs and trunk primarily due to a thiamine deficiency, and the mortality is high. In pigeons, chickens and turkeys the symptoms are si with loss of appetite, general paralysis, head retraction and d and pigs show anorexia, vomiting and impairment of gr These deficiencies rarely occur in practice, as most poultry pig foods contain ample amounts of the vitamin. Chastek para in foxes is due to a thiamine deficiency caused by destructio the vitamin in the food by some factor present in raw fish. symptoms, which can be prevented by adding large amoun thiamine to the food or by cooking the fish, are hyperaesth anorexia, weakness, ataxia and death in 48 to 72 hours.

B_2, Riboflavin.—Occurs in nearly all plant and animal tis particularly yeast, liver and kidneys, but is rapidly destroye light. A deficiency causes retardation followed by cessatio growth. In rats a corneal opacity and progressive alopecia additional symptoms, and in man, keratitis with photophobia lachrymation, a reddening of the lower lip and a flattenin the tongue papillae, and seborrhoeic skin lesions are no Chicks are very susceptible, showing severe leg paralysis in a and curled toe paralysis in chronic, cases. Egg productio reduced, and eggs failing to hatch show abnormal emb Turkey poults show dermatitis and inflammation of the ven deficiency is unlikely to occur in pigs and dogs, but, experimen corneal changes, fatty livers and degenerative changes in the ce nervous system have been produced.

Nicotinic Acid.—Occurs in all living cells in small amo and is readily absorbed from the intestinal tract. The ri sources are liver, yeast, red muscle meats, kidney, wheat and bran. In man a diet deficient in nicotinic acid lead clinical pellagra. In dogs, and possibly cats, blacktongue de manifested by lassitude, loss of appetite, and characteristic m lesions. Doses of 0·23 mg. of nicotinic acid per lb. body-w will cure these symptoms, providing the case has not progr too far, and that the diet is rich in the other vitamins of B complex. On deficient diets pigs refuse food, develop a yellow skin and show muscular inco-ordination of the hind It has been suggested that necrotic enteritis is an addit symptom, and some workers have successfully used this vit in its treatment.

B_6, Pyridoxine or Adermin, is unlikely to be deficient i animal's diet as it is found in all foods, with yeast, wheat and rice polishings as the best sources. It is concerned in pr metabolism. A deficiency in the diet of rats causes a t dermatitis with acute erythema and oedema, and even ulce of the paws, snout and ears. Fits of an epileptiform nature hav observed in pigs, dogs and rats on pyridoxine-deficient diets dogs and pigs show a reduction in the number of red cells a lowered haemoglobin level. In chicks a deficiency leads t growth and inefficient utilization of food.

Pantothenic acid occurs universally in protoplasm. Liver, kidney and rice and wheat bran are rich sources. In rats a deficiency causes a fatal cortical necrosis of the adrenal glands, with alopecia, baldness and thickening of the skin as additional manifestations. Chicks show a specific dermatitis with retarded feathering. Adult fowls need pantothenic acid for hatchability and reproduction, but not for egg production. On a deficient diet pigs show loss of appetite and haemorrhagic diarrhoea, with inco-ordination of the legs, and puppies show lowered appetite, reduction in growth, and collapse after two months.

Vitamin H, or Biotin, is present, in very low concentrations, in all living cells. No naturally occurring biotin deficiencies have been observed in farm animals, but experimental deficiencies have, in rats, chicks and turkeys, produced a dermatitis with lesions around the eyes.

Folic acid is present in liver, kidney and yeast, and there is evidence that the anaemia and leucopenia caused by administering sulphonamides to rats can be cured by its administration.

P-aminobenzoic acid is widely distributed in nature, and is an essential metabolite for all organisms that are inhibited by sulphanilamide. It can also be used in rats to detoxify certain substances in the body, particularly hydroquinone, pentavalent arsenical and antimony compounds.

Inositol is a growth factor for certain micro-organisms, and prevents the accumulation of fat in the liver of animals.

A *Choline* deficiency leads to decreased egg production in poultry, and a diffuse cirrhosis of the liver in the dog and rat.

Vitamin C is found in all the actively growing parts of higher plants, particularly citrus fruits, berries and green vegetables, and, in small amounts, in animal tissues, with the adrenal gland an especially rich source. All animals need this vitamin, but, apart from man, the other primates, and the guinea-pig, they can synthesize it, the site of its formation being, probably, the intestinal tract. Its main function is in the detoxification processes of the body, for it has been shown that injections of diphtheria toxin, or other toxic materials, may cause a marked depletion of the vitamin from the tissues, and that tissues which are depleted are subject to greater injury. There is probably a close relationship between vitamin C and various hormones, for during avitaminosis there is a decreased hormone secretion from the adrenal, pituitary, pancreas and thyroid. The breeding performance of mares may be related to the blood ascorbic acid values, and subcutaneous injections of this acid may improve the breeding efficiency of stills. In the susceptible animals scurvy is produced by a deficiency, with tenderness and swelling of the joints and gums, loosening of the teeth, and death.

J. O. L. K.

PERMANENT WORLD FOOD BOARD

Sir John Boyd Orr, Director-General of the United Nations Food and Agriculture Organization, speaking at a Press conference in London, said that at the F.A.O. conference in Copenhagen this month (called two months early because of the urgency of the problem) he would submit a plan to establish a permanent world food board to replace the present temporary world food council.

It was proposed that the board should stabilize prices in international markets, build up a world reserve of food, and develop agriculture in backward countries. Food, agriculture, and international trade and finance organizations would be represented on the board. "If we do not have this, or some plan of this kind," he said, "you will have a most awful agricultural crisis in 1949, or even in 1948 if there are bumper harvests in 1947."

By 1949 Europe would reach a pre-war level of food production, and unless nations were ready to cope with surpluses thrown on the market there would be no purchasing power for them and prices would crash. The crisis would come much more quickly than ever before. Already the food balance-sheet was greatly improved and harvests in all countries were more than promising.

The board would have funds to build up a world reserve of food. When products fell below a certain price the board would take them into reserve and when world prices tended to rise above a certain level it would release the reserves to stabilize prices.

He believed that the plan would result in the gradual elimination of hunger, a greatly expanding market for agriculture accompanied by guaranteed prices and a tremendous demand for industrial products. There would be an enormous increase in international standards of life. Something had to be done quickly because the Emergency World Food Council would finish in 1947. If the feeding of the world was to be brought up to a healthy standard, world production of food had to be increased by about 100 per cent. Even the production of cheap cereals needed to be increased because hundreds of millions of people were hungry at a time when wheat was being burnt.

Questions and Answers

"Questions and Answers" will be published on alternate weeks.

The submission of questions for inclusion in this column will be welcomed: they can relate to any aspect of veterinary work. For purposes of record, each question is numbered, and those submitting questions are required to furnish (not for publication) name and address.

Answers to readers' queries represent exclusively the personal opinions of the writers, and criticism of the replies will be appreciated.

All communications should be addressed to the Editor.

Unresponsive Milk Fever Cases

Q. CLXIII.—*From time to time one meets cases in the cow which, while presenting at first, the typical appearance of milk-fever, show no response to any treatment—calcium, magnesium, glucose, udder-inflation, strychnine, chloral hydrate—and which invariably die in about 48 hours in coma or convulsions. What is the explanation and can any treatment be suggested?*

A.—The failure of what at first appear to be typical cases of milk fever to respond to treatment is by no means uncommon. Indeed, during the earlier months of the year many such cases occurred in some districts. Without a fuller understanding of the aetiology of milk fever, and conditions which simulate it, it is impossible to recommend anything other than symptomatic treatment. Care must be taken, however, to remedy ketosis should it arise, by means of glucose, or hypomagnesaemia by injections of magnesium sulphate. In the cases of this kind which have been investigated a marked fall in the blood magnesium level has been a prominent feature, and the reference to convulsions in the question suggests such a complication. It seems probable that milk fever nowadays is not infrequently complicated by pathological features other than hypocalcaemia, and an investigation into the position relating to this disease would appear to be indicated. A real service to agriculture will be performed if this hiatus in our knowledge can be filled. Knowledge is lacking of the annual number of deaths from treated cases of milk fever. The figure is undoubtedly large, and more often than not the best animal in a herd is involved.

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Hormonal Prevention of Oestrus

Q. CLXIV.—*Theoretically, it might be expected that progesterone and testosterone have a chemotherapeutic application in the prevention of oestrus in* (1) *racing greyhound bitches and* (2) *thoroughbred mares. Does this hold good in practice and, if so, what is the recommended dosage of any synthetic preparation of these hormones?*

A.—(1) In view of the fact that when a racing greyhound oestruates, she is automatically struck off the racing strength for approximately three months, it is presumed that the enquirer wishes to avoid this loss of racing time by suppressing oestrus indefinitely. If this could be done, the question arises as to the constitutional ill-effects which might follow such an interference with a natural function. It seems quite sure that the hormone balance and the oestrual cycle would be permanently upset, so that breeding would eventually be impossible.

While the various oestrogens induce oestrus *if given in small dosage*, it is true that they have the reverse effect in large dosage. Starting, therefore, about three days before "heat" is due, one could give oestradiol benzoate or, perhaps better still, stilboestrol in 5 mg. doses once daily for the three days. The procedure would be repeated prior to each anticipated "heat." Where stilboestrol exerts a gastric-irritant effect in large doses, one could substitute the more powerful but less irritant dienoestrol—of course in smaller dosage.

Medical men have frequently suppressed menstruation in women by administration of oestradiol benzoate.

(2) The occurrence of oestrus in thoroughbred fillies is one of the minor handicaps of the racehorse trainer's work. Sedative medication is sometimes found necessary for extremely excitable animals and the rare nymphomaniac cases may need surgical interference such as the puncture of cysts; but most fillies are raced without treatment.

The prevention of oestrus by hormone therapy or in any other way is contra-indicated in animals that will be sent to stud later in life, owing to the present uncertainty that the effects of the treatment will be only transient, with the chance of upsetting the physiological rhythm and so increasing the sterility rate already high among thoroughbreds. Most owners of bloodstock would be averse to taking this risk for the sake of a possible immediate advantage.

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Adder Bite in the Domestic Animals

Q. CLXV.—*Will you please outline what treatment can be adopted in cases of adder bite in the domestic animals?*

A.—The immediate treatment is to prevent the poison from getting into the general vascular system. This is achieved by the immediate application of a tourniquet to the limb, proximal to the bite. The tourniquet must not be left on for more than half an hour without temporary relaxation. Meanwhile an incision should be made at the bitten area and an attempt made to suck out the poison (many an anxious owner would do that). Some authorities state that the injection of a few c.c. of a 1 per cent. solution of potassium permanganate into and around the wound will destroy all the poison not yet absorbed. Free incision and local venesection are advisable. If general symptoms supervene, restorative measures must be adopted such as warmth, the administration of fluids (tea or coffee) by mouth and, in extreme cases, blood transfusion. The administration of strychnine and morphine is forbidden as these drugs make matters worse; nor should alcohol be given if anti-serum is to be employed.

Anti-venom is not readily obtainable in Great Britain, but English readers will be glad to know that Messrs. Allen & Hanbury, Ltd., of 7, Vere Street, London (Tel.: May 2216) retain a small stock of anti-venom serum. When required at all, there is generally great urgency and practitioners should know where to obtain an immediate supply. Since the serum is sufficiently stable to keep for a year or two, it could be kept in stock.

When available this serum is injected into the subcutaneous tissue of the lateral abdominal wall, but in urgent cases it should be given intravenously. Doses of 10 to 30 c.c. may be necessary.

NOTES AND NEWS

Diary of Events

Sept. 7th.—Meeting of the North of Scotland Division, N.V.M.A., at Inverness (Caledonian Hotel), 2 p.m.

Sept. 11th.—Meeting of the Editorial Committee, N.V.M.A., 2.30 p.m.

Sept. 13th.—Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne, 2 p.m.

Sept. 21st.—Scientific Conference of the Nutrition Society, London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1. Sir John Orr's opening address at 10.30. (*See Notice.*)

Sept. 24th.—Meeting of the Association of Veterinary Inspectors, Friends' House, Euston Road, London, 2 p.m.

Sept. 22nd-27th inclusive.—Annual Meeting and Conference of the National Veterinary Medical Association of Great Britain and Ireland, to be held in London.

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New Appointments to the Staff of the Ministry of Agriculture

As was notified in our last issue, Council, N.V.M.A., has decided that no advertisements for appointments to the veterinary staff of the Animal Health Division of the Ministry of Agriculture shall be accepted for *The Veterinary Record* pending the settlement, in a manner satisfactory to the Association, of the question of the salaries of the Veterinary Officers of the Division.

In the meantime, any members of the profession who may, nevertheless, contemplate applying for such posts, should these be advertised elsewhere, are requested first to communicate with the General Secretary of the Association at 36, Gordon Square, London, W.C.1.

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N.V.M.A. Congress Handbook

The 1946 Congress Handbook was issued to members during the past week, and for the first time since 1939 includes a list of members and other pre-war features, including summaries of the papers to be presented to Congress.

Any member who does not receive his copy of the 1946 publication is asked to advise the General Secretary, N.V.M.A.

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Coupon-Free Utility Overalls for Veterinary Surgeons in Small-Animal Practice

As notified in our issue of last week, the Board of Trade has agreed to issue coupon-equivalent documents to enable those veterinary surgeons in small-animal practice to obtain, without surrendering personal coupons, three utility (white) overalls per annum, for use as protective clothing.

Applications for this concession should be made to the General Secretary, N.V.M.A. on the veterinary surgeon's own notepaper and should include a declaration to the effect that the applicant has not taken advantage of any other scheme of obtaining protective clothing either coupon-free or at a reduced coupon value (*e.g.*, the Ministry of Agriculture scheme) and that the clothing to be obtained will be solely used for the purposes of his or her practice.

Compliance with the Board of Trade's requirement that there shall be this declaration made and signed by each applicant is an essential part of the scheme and the Association's responsibility for its proper working, and the N.V.M.A. cannot therefore initiate the issue of coupon-equivalent documents where the declaration is absent from any application.

It should be noted, too, that some days may elapse between the receipt of the application and the issue of the document.

We are assured by the Board of Trade that facilities already exist whereby members of the academic staffs of Veterinary Colleges can obtain from Principals of the Colleges coupon-equivalent certificates to enable them to purchase protective clothing.

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PERSONAL

Appointments.—The following first appointments in the Colonial Veterinary Service are announced: Mr. R. J. Garner, B.A. (CANTAB.), M.R.C.V.S., Veterinary Research Officer, Nigeria; Captain J. F. Hart, M.R.C.V.S., Veterinary Officer, Kenya; Captain K. J. R. MacLennan, Veterinary Officer, Nigeria; Mr. D. Sheriff, M.R.C.V.S., Veterinary Officer, Northern Rhodesia.

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Births.—STEPHENS.—On August 30th, 1946, at "Hellicars," Fromto Jean (*née* Anderson), wife of T. K. Stephens, B.SC., M.R.C.V.S.—a sister for Michael (Christine Ray).

WRIGHT.—On June 26th, 1946, to Joyce Wright, M.R.C.V.S., wife of Major Beric Wright, R.A.M.C.—a son.

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Marriages.—GRIFFITHS—HARDIE.—The wedding took place at All Hallows Church, Allerton, on August 10th, 1946, between Captain Reginald Bark Griffiths, R.A.V.C., younger son of Mr. and Mrs. W. Griffiths, of Mossley Hill, Liverpool, to Celia, second daughter of Mr. and Mrs. J. S. Hardie, of Wavertree, Liverpool.

HARTLEY—STOKES.—On August 22nd, 1946, at St. John's, Peterborough, W. J. Hartley, M.R.C.V.S., of Lynch Farm, Alwalton, near Peterborough, to Myra E. C. Stokes, of Peterborough.

JORDON—MELDRUM.—On August 31st, 1946, at Merthyrmawr Church, Bridgend, Frank T. W. Jordon to Bella Meldrum, both of Bridgend.

RICHARDSON—REYNOLDS.—The marriage arranged between Mr. Basil A. M. Richardson, of Rocksforge, Knockholt, Kent, and Miss Joan F. Reynolds, M.R.C.V.S., of Kenlyn, Station Road, Orpington, Kent, took place on August 17th, 1946, at the Church of the Holy Innocents, Sevenoaks Road, Orpington.

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Will.—Mr. William Hackett, of Pointon House, Donington, near Spalding, Lincs., veterinary surgeon, left £47,004 (net personalty £19,132).

The Yorkshire Post records that Mr. Hackett charged his trustees that they should, once every year, appoint a member of the Royal College of Veterinary Surgeons, who should reside at Pointon House, and "whose duty it shall be without fee or charge, to attend in cases of illness or accidents to animals, and to perform operations upon animals on farms and holdings at which I attended professionally during the last five years I was in practice, and that they shall pay to the person so appointed the net rents of my residuary real estate after paymens of all necessary outgoings. The total amount of attendances etc., at any farm are not to exceed the average yearly amount made by him during the aforsaid five years.

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Veterinarian Yachtsman's Adventure.—After ripping out her sails in a gale on passage from Christiansand and drifting for nine days with a broken engine, the first privately owned British yacht to make a holiday cruise to Norway limped last week into dock at Berwick-on-Tweed. She was the 48 ft. "Gannet," owned by Mr. Robert Smith, a Dunoon veterinary surgeon, states the *Sunday Dispatch* of August 25th. With him were Mr. Blair, of the Clyde Cruising Club; Major Douglas, Royal Scots Fusiliers; and Mr. Van Wek, a South African. Her staysail was ripped to pieces and the jib was blown out, while the engine petered out after a heavy battery had fallen on it. Then the weather changed and for two days the yacht drifted in a calm. When the wind blew up again spare sails were hoisted and port was made safely.

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R.C.V.S. OBITUARY

THE LATE MR. PETER MEIKLE, M.R.C.V.S.

In a tribute to Mr. Peter Meikle, M.R.C.V.S., whose death was recorded with much regret in our last issue, *The Scottish Farmer* says that in his own district Mr. Meikle was regarded as an outstanding veterinary surgeon equally at home in attending to the ailments of cattle or horses. He was held in very high esteem.

"As President of the Strathaven Agricultural Exposition, Mr.

Meikle was known to the agricultural community far and wide. The Exposition was his chief hobby, perhaps. It was he who had been its guiding genius right since its beginning, shortly after the last war, and he had seen it grow from a comparatively small affair up to the large and important event which it is to-day. Even the major catastrophe of a world war could not damp his enthusiasm for the Exposition and in face of the greatest difficulties he managed to keep things going when most other Societies had to admit that they were beaten.

"As a lecturer the services of Mr. Meikle were in request and on the public platform he was quite at home. Mr. Meikle was a man who was highly respected by all with whom he came into contact. He was a warm-hearted and a generous friend and in the circles where he was best known he will be much missed."

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IMMUNIZATION WITH B.C.G.

In the course of an editorial article on the above subject published on July 27th, the *British Medical Journal* first recalls the fact that in an issue of the Journal late in 1943 a good deal of space was given to reporting a meeting of the Tuberculosis Association and to editorial comment upon it (December 4th, 1943, pp. 716, 722). The subject discussed was the use of B.C.G. vaccine for immunization against tuberculosis, and of the four principal speakers two came from Norway, one from Canada, and one from the U.S.A. The meeting concluded by passing a resolution in these terms: "The Council of the Tuberculosis Association is instructed to approach the Joint Tuberculosis Council and the Council of the National Association for the Prevention of Tuberculosis with a view to a joint request to the Minister of Health to make B.C.G. available for trial in this country." The *B.M.J.* proceeds: "This resolution has now borne fruit: these three organizations appointed a joint committee to examine the question further, and the ultimate result was a deputation which went to the Ministry of Health last week. Sir Wilson Jameson received the deputation with sympathy and expressed himself willing to take steps to see if a suitable vaccine could be made available in this country. It would be necessary to appoint an expert committee to examine the use to which it could be put and the class of persons to be vaccinated. The whole question would be explored by the Ministry of Health.

"The deputation presented a memorandum prepared by Professor W. H. Tytler on behalf of the Joint Committee which gives a full account of the history and achievements of B.C.G. vaccine. . . . Although practically non-pathogenic, the Bacillus Calmette Guérin, when administered in the form of a living vaccine, induces tuberculin sensitiveness and increases resistance to subsequent infection with virulent tubercle bacilli. It is unquestionably more effective in this direction than an ordinary heat-killed vaccine. It may perhaps be less effective than a living vaccine of Wells's vole bacillus, but that is another and more recent story. The immunizing effect of B.C.G. has been exhaustively studied in animals, and is the subject of a long-term field trial in cattle which has now been in progress in this country for a number of years.

"B.C.G. began to be used for human vaccination more than 20 years ago . . . Heimbeck and Wallgren in Norway have provided the soundest evidence we have of what B.C.G. can do. This consists largely of observations made in hospital nurses, who form a particularly suitable group for such study, and at the same time constitute a class in much greater need of protection against tuberculosis than the population as a whole. These nurses were Mantoux-tested on entry, and it had been observed that those who were negative more often developed tuberculosis during their training than those who were originally positive. Immunization of negative reactors with B.C.G. reduced the morbidity in one series from 17·6 to 2·6 per cent. . . . One of the drawbacks of the method has recently been overcome: an abscess is fairly often produced by the subcutaneous injection of B.C.G., but the method of multiple puncture of skin to which the vaccine has been applied results in a trivial papular lesion leaving no scar, and appears also to be more effective than either subcutaneous or intracutaneous injection.

"By no means all the results obtained with B.C.G. have been as conclusive as those in Scandinavia. There is still room for argument about the degree and duration of immunity, and the indications for using the method at all. But it is unquestionable that this is a method of increasing resistance to tuberculous infection which may be valuable in certain circumstances, and it is much to our discredit that this country has contributed nothing to its study in the human field. . . . It is pointed out that a single source of supply is highly desirable, and that 'the product should have behind it some form of official backing: either preparation under direct auspices of a Government Department, such as the Ministry, or the Medical Research Council, or some form of guarantee or certification of the technical methods employed, provided by an official department such as the Standards Department of the Medical Research Council.' The necessity for these provisions is obvious: a uniform, safe, and active product is essential, and its manufacture should be as much a Government responsibility as that of smallpox vaccine lymph. . . . It seems a necessary corollary to official recognition that B.C.G. vaccination is worthy of adoption in this country, whether as a recognized method of immunization or for the purpose of further trial."

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LEGAL NOTES

Judge Says Sheep ARE *Cattle.*—In an adjourned case at Glamorgan Assizes at Swansea (reports the *Farmer and Stock-Breeder*), counsel argued for three hours to decide whether sheep were "cattle." Quotations from the Bible and Shakespeare were given to assist the decision, and finally the case was left over so that special law books could be sent down from London. The case concerned a farmer (John Morgan, 40, Southerndown Farm, Glamorgan), who was charged with maliciously killing two sheep belonging to two neighbouring farmers.

Advocate for accused said the Act of 1861 applied to cattle and to certain domestic animals, but there was no section of the Act which specifically stated the word "sheep." He submitted, therefore, that the charge failed. Prosecution argued that the Act referred to the "maiming or killing of cattle" and cattle must include sheep.

Prosecuting Counsel: I admit being unable to point to the legal fact in the Act which states that sheep are cattle, but since a sheep is not a domestic animal it must come under the other section of the Act which is "cattle."

The judge finally decided that sheep were cattle within the meaning of the Act, and the case against the farmer would proceed.

The accused alleged that, despite his constant warnings, animals were wandering from common land adjoining his farm on to his property, ruining his crops. That sort of thing had been going on for a long time and he had suffered losses as a result. On May 25th he saw the sheep on his property and in a fit of temper ran out and killed them. He pleaded guilty.

Defendant was found guilty and ordered to pay costs and restitution to the losers of £5 and £6 respectively for each sheep, and bound over for twelve months to be of good behaviour in the sum of £5.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

SWINE FEVER:

Herefordshire.—Fir Tree Inn, Much Cowarne, Bromyard, Hereford (Aug. 28th).

Lincs. (*Lindsey*).—Dogdyke, Lincoln (Aug. 28th); Toynton All Saints, Spilsby, Lincs. (Sept. 2nd).

Middlesex.—St. Leonards Farm, New Year's Green, Harefield, Uxbridge, Middlesex (Aug. 29th).

Northants.—5, South Terrace, Green's Norton, Towcester, Northants (Aug. 29th).

Notts.—Farm House, Catherine Street, Bulwell, Nottingham (Sept. 2nd).

Warwicks.—Howes Lane Allotments, Coventry, Warwicks (Aug. 30th).

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VETERINARY EDUCATIONAL TRUST

The Veterinary Educational Trust has been admitted as one of the bodies recognized for incorporation in the Federated Superannuation System for Universities. This means that the Fellows and other personnel working under the auspices of the Trust on scientific problems can come within the same scheme for superannuation as the personnel of universities and all research institutions. This should make for a more ready interchange between the Trust Fellows and the staffs of the universities.

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EQUINE DISEASES TO BE INVESTIGATED

Professor William C. Miller, first director of the new Equine Research Station at Newmarket, in an interview, stated that the threat of a still further spread into England of grass sickness among horses proved the necessity of at once making a survey and a reliable record of facts, particularly as to the manner in which the disease had travelled into certain parts of Eastern England from Scotland. This matter was essentially an undertaking for the staff of the Research Station but the Veterinary Educational Trust needed to enrol the services of still more expert staff which could be allocated to such an enquiry. Professor Miller

added: "Problems to be investigated, immediately, will generally fall into two categories, long and short range. The latter will include the conditions and pathological background of lameness in horses and its causes. One long-range problem will certainly be an enquiry into the methods of feeding in relation to the prevention of disease. An investigation of this sort may demand years of study ere its results emerge."

Offers of gifts of scientific and historical books on the horse for the library at the Newmarket Equine Research Station are already being received by the Veterinary Educational Trust.

Dr. Guillermo V. Garbers, Veterinary Surgeon to the Jockey Club of Buenos Aires, has been granted facilities to pursue his studies for a year at the Equine Research Station.

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INCOME TAX TREATMENT OF EXPENDITURE ON SCIENTIFIC RESEARCH

Position of Agriculture and Horticulture

Organizations engaged upon agricultural and horticultural research, in common with those carrying out scientific research for the purposes of industry, are expected to benefit from the provisions of Part IV of the Finance Act, 1944, and Part VI of the Income Tax Act, 1945, which came into force on April 6th, 1946, says the Ministry of Agriculture, in a recent announcement.

Under the provisions of these two Acts, payments to approved research organizations made by agriculturists who are assessable to Income Tax under Schedule D will be chargeable as an expense in their accounts even if the payment is intended as a contribution towards the cost of a definite capital project to be carried out by the organization. This latter type of payment has not hitherto ranked as a permissible deduction for Income Tax purposes.

In order to qualify for this relief as far as agricultural research is concerned, payments must be made to a research organization that has been approved by the Agricultural Research Council. Applications by such organizations for approval should be sent to the Secretary, Agricultural Research Council, 6A, Deans Yard, Westminster, London, S.W.1.

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A special meeting has provisionally been fixed for October 9th to provide an opportunity for the B.M.A. Council to discuss the National Health Bill in its final form.

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Weekly Wisdom

A straight sentence is as important as a straight furrow. The world is dying of blurred thought, and blurred language is an aggravation of the disease.—Charles Morgan.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

Notice to Correspondents

The Editorial Committee regrets that, the paper supply situation having deteriorated, it has become necessary to ask correspondents again to accept a limitation on the length of letters submitted for publication. Accordingly, contributors to our Correspondence Columns are requested to note that, until further intimation is made, their communications must not exceed 350 words.

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OVERSTOCKING OF COWS

Sir,—Reference the letter from the Oxfordshire Federation of Women's Institutes, published in your issue of August 31st, there is no difficulty whatever in bringing a charge of cruelty in any case of the overstocking of cows, under Section I (i) of the Protection of Animals Act, 1911, which clearly states that if any person shall *by omitting to do any act* cause any unnecessary suffering to any animal, such person shall be guilty of an offence of cruelty within the meaning of the Act, and shall be liable upon summary conviction to a fine not exceeding £25, or alternatively, or in addition thereto, to be imprisoned, with or without hard labour, for any term not exceeding three months. Under Section 12 of the Act a Police Constable (which term does not, of course, include an Inspector of the R.S.P.C.A.) may apprehend without warrant any person who he has reason to believe is guilty of an offence under this Act which is punishable by imprisonment without the option of a fine, whether upon his own view thereof or upon the complaint and information of any other person who shall declare his name and place of abode (which group would, of course, include an Inspector of the R.S.P.C.A.).

As far back as 1913, in the case of Waters *versus* Braithwaite (*The Times Law Reports*, vol. 30, p. 107), three of His Majesty's judges, hearing an appeal, decided that causing unnecessary suffering to a cow by allowing her to be overstocked before offering her for sale is an offence under Section I (i) of the 1911 Act, and where it had been proved to have been done, they sent the case back to the local justices with a direction to convict the offenders. From a utilitarian point of view it is well known to all physiologists that there is nothing more inhibitory to the secretion of milk than an overstocked mammary gland.

Yours faithfully,

23, Queen's Gate Gardens, S.W.7. Thomas Lishman.
September 2nd, 1946.

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SOME CONTROVERSIAL FACTORS IN THE INCIDENCE OF TUBERCULOSIS AND MASTITIS

Sir,—In Principal R. Boutflour's address given at a mass meeting of farmers organized by Boots the Chemists in conjunction with the Kent County Branch of the N.F.U. at Maidstone, on Thursday, March 7th, 1946, the following statements were made:—

(1) "A cow merely requires its lungs to deal with and digest, or burn, ignite and generate into heat 20 lb. of hay or 6 lb. of starch equivalent. It takes a very small lung to do this. A lung in excess of that requirement merely becomes a source of trouble. Take note when you have your cows tested for T.B., if you put your large-lunged cows in one group and your small-lunged cows in another, you will find it is your large-lunged cows that react."

(2) "Cows that have gone down with mastitis have had square udders. If you want to see mastitis really bad, go to Ayrshire, where their cows have perfect udders. There is more mastitis there than anywhere. The square bag is very nice to look at, but bear in mind that cows with a square bag are more likely to get mastitis."

One would like to ask those members of the profession who have any observations on these points to publish them with a view to confirming or otherwise Principal Boutflour's statements. Earlier on in this same address, the speaker instanced a farm in Gloucestershire where, in 1937, he was called because the cows were giving very little milk, and with the exception of one they had all reacted to tuberculosis. After taking Principal Boutflour's advice, which included the purchase of a bull costing only £35, the farmer's heifers averaged 926 first calf and the herd became tubercle free. Unfortunately Professor Boutflour did not indicate any special reasons why the herd became free from tuberculosis, unless perhaps he culled all those cows with large lungs.

Yours faithfully,

The British Oil & Cake Mills Ltd., W. P. Blount.
Unilever House,
Blackfriars, London, E.C.4.
August 28th, 1946.

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DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Parasitic Mange*	Sheep Scab	Swine Fever
August 1st to 15th, 1946 ...	4	1	2	—	9
Corresponding period in—					
1945 ...	6	2	—	1	37
1944 ...	5	16	—	1	89
1943 ...	6	2	—	1	24
Total Jan. 1st to Aug. 15th, 1946 ...	64	31	7	39	297
Corresponding period in—					
1945 ...	71	101	6	48	616
1944 ...	123	45	6	62	607
1943 ...	188	12	6	105	333

Note.—The figures for the current year are approximate only.
*** Excluding outbreaks in Army Horses.**